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ABSTRACT

A description is provided of the use of a Critical Thinking Worksheet as a pedagogical tool for introducing critical thinking to students of philosophy and informal logic. First, an accompanying handout introduces essential terms such as "argument," "conclusion," and "reasons or premises." The worksheet itself constitutes the second page of the handout. It begins by asking students to identify the premises and conclusion in a brief paragraph on smoking, and then guides discussion through the steps in the process of critical thinking, covering ambiguous terms, the truth of the premises, the strength of the argument, the use of emotive tone, the fallacies in the argument, counterarguments, a summary assessment, additional information needed, response to counterarguments, and the student's own view. Additional handouts provide students with assistance in verifying the truth or falsity of the premises of an argument and in identifying kinds of fallacies, such as hasty generalizations, false causes, argument resting solely upon the strength of an authority, argument against the person making the claim rather than the claim itself, and appeals to emotion. After using the worksheet with the smoking argument, students are asked to write on a new topic and provide their own examples. The use of the worksheet has resulted in radical improvements in student papers. (LAL)

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THE CRITICAL THINKING WORKSHEET

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THE CRITICAL THINKING WORKSHEET

In teaching philosophy and informal logic classes, I found that I was able to teach students the technical skills involved in critical thinking, which includes identifying premises, assumptions, conclusions, ambiguous terms, fallacies, counterarguments and so on. When I asked students to critically evaluate a paragraph or an essay, they were unable to integrate all of these critical thinking skills in the overall task of evaluating the paragraph or essay. To deal with this problem, I developed the Critical Thinking Worksheet as a pedagogical tool for introducing critical thinking, and I have used it very effectively in my presentation to beginning students of philosophy and informal logic. On the first day of class, my students are given a four-page handout. I shall describe this handout and shall briefly explain what I do with it.

On the first page, I introduce some essential terms, as follows:

Argument: a conclusion together with support for that conclusion.

Conclusion: a statement which is supported by reasons or premises.

Reasons or Premises: statements which support the conclusion.

Example of an Argument:

Reason 1 - There are dark clouds in the sky.

Reason 2 - The weatherperson predicts rain.

Conclusion - It will rain today.

After this brief introduction, I ask students to identify the reasons and conclusion in the following paragraph:

> Why would any sane and intelligent person want to smoke? After all, smoking has been found to cause lung cancer or other serious health problems. Jane Fonda has indicated that smoking is an undesirable habit. Besides, no one will kiss a smoker.

I have found this argument on smoking to be the most effective introductory argument for several reasons: first, all students are familiar with this subject and they already have an opinion on this issue, and no specialized background information will be required for this lesson; and secondly, the argument has an obviously false statement as well as an irrelevant premise, so students do not have to work hard to identify weaknesses in the argument. Students are able to focus their attention on the new material which is the worksheet on the second page of the handout, and which is attached.

CRITICAL THINKING WORKSHEET

A) ARGUMENT

Reasons

(1) Smoking causes lung cancer or other serious health problems.

(2) Jane Fonda says smoking is an undesirable habit.

(3) No one will kiss a smoker.

Conclusion No sane intelligent person should smoke.

True	False	Uncertain

B) AMBIGUOUS TERMS

C) TRUTH OF REASONS

D) STRENGTH OF ARGUMENT

Perfect	Very Strong	Strong	Good	Fair	Weak	Very Weak	Contradictory

Use of Emotive Tone	Excessive	Strong	Moderate	Limited	Neutral

Fallacies	Hasty Gen.	False Cause	Arg. From Authority	Arg. Against the Person	Black/ White	Appeal to Emotions	Non Sequitur

E) COUNTERARGUMENTS

F) SUMMARY

Strongly Agree	Agree With Some Qualifications	No Judgment Need More Information	Disagree With Some Qualifications	Strongly Disagree

Information Needed:

Response to Counterarguments:

My Own View:

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We review the steps in the process of critical thinking in the order of topics covered on the worksheet. First, we talk about truth or falsity of the claims. After the first day, I will distinguish soundness and validity; however, I have discovered that beginning students have difficulty in these logical considerations if the argument contains premises which are false. I have found that I can teach more effectively if I address their initial concerns with the truth or falsity of the premises, and then later introduce other distinctions. I do point out that we cannot verify a claim unless we clarify the terms contained in the claim. For example, I point out that "smoking" is ambiguous, and could be understood to refer to smoking tobacco and inhaling the smoke, or to just occassionally puffing on a pipe without inhaling the smoke. The probable truth of the first claim that "Smoking causes lung cancer and other serious health problems" depends on the intended meaning of "smoking." I usually provide examples of ambiguous terms or loopholes in a few interesting legal cases in order to demonstrate the importance of semantical clarity.

After we discuss other ambiguous terms in this argument, we turn to truth, falsity or uncertainty. On the third page of the handout, the following material enables students to get started on the verification of the premises.

> As you list each reason, consider whether the statement is true, false or uncertain, and indicate this with a checkmark to the right of the statement. To determine the truth of each statement, ask yourself the following questions:
>
> > Is this a claim which I cannot prove to be true or false, but I will nonetheless assume to be true? (Example: Every event has a cause.)
> >
> > Is this an empirical claim, that is, a statement which could be confirmed or proven to be true through direct or indirect sense experience? (Example: Two bushels of wheat can keep seven rats alive for one year.)

Is there support for this claim?
Is this claim consistent with my own experience, or with the reports and experiences of others?
Does this statement conflict with any theory of which I am aware?

Is this a claim about values? (Example: We are morally obligated to help the poor.)
Do I share these values?
Do others share these values?

Is this a claim which I know is true by observing the definitions of terms contained in the statement? (Example: All mammals nourish their young with milk secreted by mammary glands.)

Section C of the worksheet provides room for comments; for example, one can offer evidence for the truth of the statement, or can specify the information one would need in order to verify the statement. For the first premise in the argument, I would specify that if "smoking" refers to inhaling the smoke from two packs of cigarettes daily for twenty years, then I accept Reason 1 as true on the basis of the information provided by the Surgeon General and other health officials.

Section D of the worksheet deals with the issue of the strength of the argument. Again, this topic is being introduced in the first hour of class, and we rely on an intuitive understanding of the relative strength or weakness of an argument. I offer alternative arguments to the same conclusion, and ask students to compare them with respect to strength. Later in the semester, we will talk about validity, the inductive-deductive distinction, and so on, but at this point students are able to make some judgments about the strength of the argument. However, before we do so, I ask that the emotive tone and fallacies be considered.

Emotive tone, which refers to the degree to which the reader's feelings are aroused by the argument, is an extremely important topic. Students tend to think that the conclusion is well-supported if the argument contains many

words with strong emotive tone. I clarify this problem so that they can more clearly judge the relative strength or weakness of the argument. The conclusion states that "No sane intelligent person should smoke," and we note that "sane" and "intelligent" used in this context tend to arouse feelings. Specifically, we feel pride in our sanity and intelligence, and we become defensive and angry if someone implies that if we disagree, we will be viewed as insane and unintelligent. I briefly discuss some physiological changes which take place in the body when emotions are aroused, changes which basically reduce the blood supply to the neocortex and this, in addition to other changes, interferes with our normal ability to think clearly. By pointing out the words with emotive tone and the effect of these words, students can clarify the argument in more neutral terms and are better judges of its strength.

It is also helpful to deal with fallacies before judging the strength of the argument. During the first hour of class, students are given the following material which appears as the fourth page of the handout.

Fallacies

A fallacy is an argument which might appear to be convincing or persuasive, but on analysis will prove to contain some error in reasoning.

HASTY GENERALIZATION: Generalizing (using all, every) from too few instances.

(1) One A is B.	(1) One redhead has a hot temper.
(2) Another A is B.	(2) Another redhead is hot-tempered.
(3) Therefore, all A's are B.	(3) Therefore, all redheads are hot-tempered.

FALSE CAUSE: Claiming that just because one event precedes another, the first event is the cause of the second event.

(1) A occurred before B.	(1) I sneezed, then the customer walked out.
(2) Therefore, A caused B.	(2) Therefore, sneezing sends customers away.

ARGUMENT FROM AUTHORITY: Accepting a statement as true just because it was made by an expert, authority or even a well-known person.

(1) A is an authority on B.	(1) Physicist A won the Nobel Prize.
(2) A said C.	(2) Physicist A says Vitamin C cures cancer.
(3) Therefore, C must be true.	(3) Therefore, Vitamin C cures cancer.

ARGUMENT AGAINST THE PERSON: Attacking the individual who made the statement rather than the statement itself.

(1) A said B.	(1) Politician A says we need a national health program.
(2) A has characteristic C.	(2) Politician A has many personal problems.
(3) Therefore, B is false.	(3) Therefore, what Politician A says is false.

BLACK OR WHITE FALLACY: Inaccurately representing a situation as having only two alternatives; demonstrating that one alternative is undesirable, hence the other alternative is correct.

(1) A situation might be A or B.	(1) Either you make a million by the time you are thirty, or you are a failure.
(2) This is not A.	(2) You are thirty and have not made a million.
(3) Therefore, this must be B.	(3) Therefore, you are a failure.

APPEAL TO EMOTIONS: Arousing emotions (pride, fear, pity, sexual feelings, grief, etc.) and causing the individual to have difficulty in reasoning well.

(1) (Here is something which will arouse emotions.)	(1) I am sorry to hear that your loved one died. It is so sad to be alone now, and some people even die shortly after their loved one goes! I knew of one couple, and they both died within months of each other.
(2) Therefore, anything follows.	(2) Therefore, it is a good idea for you to sell your business to me at this low price.

NON SEQUITUR: (From the Latin, meaning "it does not follow") Any very weak argument in which the reasons provide very poor support for the conclusion.

The Critical Thinking Worksheet

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After the first class session, I will discuss the fallacies in greater detail, and will introduce good forms of arguments and the related fallacies. For example, the good form of a generalization is something like the following:

(1) One A is B.

(2) Another A is B.

(3) I have examined other instances of A, and they are B.

(4) My sample is of a sufficient number in proportion to the total population.

(5) My sample is representative of the total population.

(6) I have attempted to rule out alternative explanations.

(7) Therefore, all A's are B.

The Hasty Generalization is a weak form of this argument in that it might not contain reasons (4), (5) or (6) above, or perhaps it is simply as follows:

(1) One A is B.

(2) Another A is B.

(3) Therefore, all A's are B.

I stress the fact that most fallacies are weak forms of arguments which resemble really good arguments. When analyzing fallacies, students are sometimes able to analyze the same argument and use different fallacies to point out the weakness. For example, if an individual wishes to silence objectors, this individual might cite Albert Einstein who said, "Great minds will always encounter opposition from mediocre minds." This can be called an Argument from Authority, Argument Against the Person, and Black or White Fallacy. This would be a problem if one is designing a multiple choice test, for it is difficult to decide on the best single answer. However, I do not give multiple choice tests for critical thinking.

I ask my students to name the fallacy and to point out exactly what is wrong with the argument. The fact that they are able to use different fallacies does not bother me, just as if I asked someone to remove a nail from a board, it would not matter if the individual used a claw hammer, pair of pliers or even a pair of scissors, as long as he or she removed the nail. If the students can use several different fallacies to point out the weakness of an argument, this is acceptable to me.

Returning to the worksheet, we find that Jane Fonda might not be an appropriate authority. In addition, the third reason is false, because many people kiss smokers. The argument can be viewed as strong because the first premise provides very good support for the conclusion, despite other weaknesses in the argument.

Finally, we take a look at counterarguments. If a statement is in need of support, then it probably is somewhat controversial and there are counterarguments which must be considered. It is common for students to avoid counterarguments because, as one student put it, "It would weaken my position." We discuss the importance of considering counterarguments, and discuss some counterarguments for the smoking argument, e.g., smoking helps me to control my weight, it relaxes me and gives me pleasure, and I am addicted to it and it is hard to quit, and so on. We also discuss responses to these counterarguments.

Now we are ready to talk about the Summary in Section F. I included this section in the worksheet because some students would make critical remarks without commenting on the manner in which these remarks affected their view; other students might believe that total agreement or disagreement were the only possible options. I stress the point that a suspension of

judgment is often and appropriate and indeed, the only intelligent response when we have insufficient evidence. If students wish to exercise this option, they must specfy the information they need in order to either agree or disagree. Also, they must respond to the counterarguments. On the last lines of the worksheet, they have the opportunity to spell out their own view with any relevant qualifications.

We are able to cover this worksheet in the manner suggested above in about one hour. After this introduction, we work on the technical skills. The benefit is that now the students have the overall picture in mind and they are aware of the manner in which the technical skills relate to critical thinking--the overview which they acquire during the first hour remains with them throughout the course.

The worksheet was introduced in my text Logic Notes (published by Burgess Publishing). Other instructors asked me to put together a packet which contained worksheets and minimal instructions for the use of the worksheet. I did this, and included a sample analysis of a letter to the editor taken from a local newspaper, and a sample essay based on this letter. The letter is regarding virginity ("Princess Di was a virgin and she married a Prince, so all virgins will find princes," and so on.). In the philosophy class, I have found that the most effective way to teach is to spend about three weeks on the technical skills. After this preparation, I ask my students to evaluate the letter on virginity and to write an essay based on this worksheet. They may not plagiarize, but they may reword parts of the sample worksheet and sample essay. At least, they have a trial run at writing this sort of essay. They also have the benefit of a sample essay just in case they get stuck in their efforts, although most students differ with the view expressed in the sample essay.

After this initial project, students are asked to write on a new topic and they receive no samples. The results I have received are nothing short of astonishing: thoughtful and reflective essays on a variety of topics, including medical ethics, freedom versus determinism, and other topics. The radical improvement in the students' papers can be illustrated with this fact: prior to the use of the worksheet, about 60% of the students would write an essay which consisted of an exegesis of a particular philosopher's view and they would not make critical comments at all; only 40% of the students made critical comments of any kind, and fewer than 10% of the students specified their own view. Since I introduced the worksheet in philosophy classes, 100% of the students include critical evaluations in their essays, and they all express their own views, with varying degrees of skill in the evaluation and support of their own view. I view this as phenomenal. In addition, students rarely experience the "thinker's block" which used to plague them. If they do not know how to begin, they start with a worksheet and can proceed in an orderly fashion to work on an outline for their papers.

If you wish to have further information on the worksheet, please contact me.

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